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TRIM ATTACHMENT PROCESS
APPROVED PCT/PTO 31 MAY 2006**Field of the Invention**

[0001] The invention relates to a trim cover for a motor vehicle seat. More particularly, the invention relates to a method of attaching a trim cover to a foam pad of a motor vehicle seat.

Background of the Invention

[0002] A seat cushion or seat back of a motor vehicle seat is typically formed from a foam pad covered by a trim cover. Typically, the trim cover and the foam pad are attached to one another by an adhesive material or by sewing the trim cover to the foam pad. Various materials can be used for the trim cover, including cloth, vinyl, and leather. Leather is a particularly desirable trim cover material due to its luxurious appearance and comfortable feel. One problem that is, however, present with the use of leather trim covers is the formation of wrinkles or creases along the leather as it is stretched under a load. This detracts from the overall appearance of the seat. Typically, the wrinkling is the result of an insufficient attachment between the leather trim cover and the foam pad.

[0003] Thus, there is a need for a method of attaching a trim cover, particularly a leather trim cover, to a foam pad that eliminates wrinkles along the leather trim cover.

Summary of the Invention

[0004] According to one aspect of the invention, a method of attaching a leather trim cover to a foam pad utilizes a laminate. The laminate includes a double-sided adhesive film secured to a top surface and a heat-activated adhesive applied along a bottom surface. The method includes the steps of placing the top surface of the laminate against the leather trim cover and applying pressure of the pressure sensitive adhesive film against the leather trim cover to bond the laminate thereto; applying the bottom surface of the laminate to the foam pad; and heating the bottom surface of the laminate to bond the heat-activated adhesive to the foam pad and couple the leather trim cover thereto.

Brief Description of the Drawings

[0005] Advantages of the present invention will be readily appreciated as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying drawings wherein:

[0006] Figure 1 is a perspective view of a motor vehicle seat including a leather trim cover;

[0007] Figure 2 is a cross-sectional view of the attachment of the leather trim cover to a foam pad according to a method of the invention;

[0008] Figure 3 is a cross-sectional view of a laminate utilized to attach the leather trim cover to the foam pad; and

[0009] Figure 4 is a cross-sectional view similar to Figure 2 including a foam foundation pad disposed between the leather trim cover and the foam pad.

Detailed Description of the Preferred Embodiment

[0010] Referring to Figure 1, a seat 10 is provided for supporting an occupant within a motor vehicle passenger compartment 12. The seat 10 includes a trim cover, generally indicated at 14, which provides the seat 10 with an aesthetically pleasing appearance that complements the passenger compartment 12.

[0011] Referring to Figure 2, the trim cover 14 includes an outer or support surface 16 and an opposing inner surface 18. In a preferred embodiment, the trim cover is a natural leather trim cover 14, such as cowhide, horse hide, or another animal hide. The trim cover 14 may also be formed from a synthetic or artificial leather material.

[0012] The leather trim cover 14 covers a contoured cellular foam pad 20, which is well-known to those of ordinary skill in the art, to form the seat 10. It should be appreciated that one or more leather trim covers 14 may be utilized to fully cover the

foam pad 20. The foam pad 20 is molded to a particular shape and includes an upper surface 22. Preferably, the foam pad 20 is formed from a urethane foam material.

[0013] Referring to Figures 2 and 3, an intermediate laminate, generally shown at 24, is positioned between the leather trim cover 14 and the foam pad 20. The laminate 24 is cut to compliment the shape of the leather trim cover 14. The laminate 24 includes a base portion 26 extending between a top surface 28 and an opposing bottom surface 30.

[0014] Referring to Figure 3, a double-sided adhesive film 32 is coupled to the laminate 24. The adhesive film 32 includes opposing first 34 and second 36 adhering surfaces. The first adhering surface 34 is bonded to the top surface 28 of the base portion 26. The second adhering surface 36 is covered by a protective cover 38, which is formed from a paper-like material. The cover 38 is removable to expose the second adhering surface 36 for bonding the laminate 24 to the leather trim cover 14. The second adhering surface 36 is pressure-sensitive such that the laminate 24 must be compressed against the leather trim cover 14 to effect the bond thereto. Together, the leather trim cover 14 and the laminate 24 may be placed in an oven for preheating at a low temperature, which makes the leather trim cover 14 more pliable.

[0015] The bottom surface 30 of the base portion 26 is disposed along the upper surface 22 of the foam pad 20, as shown in Figure 2. The bottom surface 30 is coated with a heat-activated adhesive 40. Upon the introduction of heat, the heat-activated adhesive 40 is cured to bond the laminate 24 to the foam pad 20 and couple the leather trim cover 14 thereto. The heat may be provided in various ways including, but not limited to, heat injection into the foam pad 20, hot air induction, and heater pad activation.

[0016] Alternatively, referring to Figure 4, an intermediate foam foundation pad, generally shown at 42, may be positioned between the leather trim cover 14 and the foam pad 20. When the intermediate foam foundation pad 42 is utilized, the laminate 24 attaches the leather trim cover 14 to an upper end 44 of the foam foundation pad

42 instead of the foam pad 20 directly. The foam foundation pad 42 provides additional padding below the leather trim cover 14 to give the seat 10 more cushioning. The foam foundation pad 42 is cut to a desired shape to match or compliment that of the leather trim cover 14 prior to the coupling therewith.

[0017] An adhesive film 46 is positioned between a lower end 48 of the foam foundation pad 42 and the upper surface 22 of the foam pad 20. The film 46 is coated with a friction reducing agent, as is known to those skilled in the art. As a result, the film 46 prevents friction between the foundation foam pad 42 and the foam pad 20.

[0018] In a method of attaching the leather trim cover 14 to the foam pad 20 according to the invention, the protective cover 38 is removed from the top surface of the double-sided adhesive film 32. The exposed top surface of the adhesive film 32 is then placed against the inner surface 18 of the leather trim cover 14, as shown in Figure 2. The pressure sensitive side of the adhesive film 32 and the laminate 24 is pressed against the leather trim cover 14 to bond the laminate 24 thereto. Next, the trim cover 14 and attached laminate 24 are preheated at low temperature in a warming oven to make the leather trim cover 14 more pliable. The bottom surface of the laminate 24 is then applied to the foam pad 20 such that the heat-activated adhesive layer 40 contacts the upper surface of the foam pad 20. Finally, heat is applied to the laminate 24 to cure the heat-activated adhesive 40 and bond the laminate 24 to the foam pad 20. Thus, the leather trim cover 14 is attached to the foam pad 20. Additionally, the seat 10 with the leather trim cover 14, laminate 24 and foam pad 20 may also be placed in an oven in order to heat the top surface and relax the leather trim cover 14, aiding in removing wrinkles on the top surface thereof.

[0019] If the foam foundation pad 42 is utilized as shown in Figure 4, the bottom surface of the laminate 24 having the layer of heat-activated adhesive 40 is first applied to the upper end 44 of the foam foundation pad 42. Heat is applied to the bottom surface of the laminate 24. The heat cures the heat-activated adhesive 40 along the bottom surface 30 to bond the laminate 24 to the foam foundation pad 42. The cover 38 is then removed from the top surface of the laminate 24 to expose the

second adhering surface 36 of the adhesive film 32 underneath. The laminate 24 is then placed against the leather trim cover 14 such that the second pressure sensitive adhering surface 36 abuts the inner surface 18 of the leather trim cover 14. The laminate 24 is pressed against the leather trim cover 14 to bond the laminate 24 thereto. Thus, the leather trim cover 14 is attached to the foam foundation pad 42. The leather trim cover 14, along with the foam foundation pad 42 secured thereto by an adhesive bond, is secured to the foam pad 20 to form the seat 10.

[0020] The use of the laminate 24 to attach the leather trim cover 14 to the foam pad 20 (or to the foam foundation pad 42) eliminates wrinkling along the leather support surface 16. The resistance to wrinkling is brought about by the continuous bonding of the laminate 24 to both the leather trim cover 14 and the foam pad 20. The laminate 24 also provides additional support to the leather trim cover 14 and aids in restricting stretching thereof. Thus, the leather trim cover 14 is not able to float or move relative to the foam pad 20, thereby eliminating wrinkling along the leather trim cover 14.

[0021] It should be appreciated that the trim cover attachment method as disclosed may be used to form various components including, but not limited to, a seat cushion, seat back, bolster, headrest, door panel, instrument panel, armrest, or visor.

[0022] The invention has been described in an illustrative manner. It is to be understood that the terminology, which has been used, is intended to be in the nature of words of description rather than of limitation.

[0023] Many modifications and variations of the invention are possible in light of the above teachings. Therefore, within the scope of the appended claims, the invention may be practiced other than as specifically described.